

A common method of Machine Vibration Analysis relies on comparing vibration spectra with characteristic spectra of the machine class, obtained by averaging spectra from healthy machines. Variations in rotational rates pose challenges for spectral comparison. Order Normalization, dividing the frequency scale by the rotational rate, resolves this issue. However, identifying the rotational rate by identifying tones in the spectra due to known machine forcing frequencies is complex, particularly when the number of anomalous tones increases due to mechanical issues. This presentation introduces a novel method for order normalization that does not rely on individual tone identification. Transforming the new spectrum data and the characteristic spectrum to the log domain and forming the correlation function between them yields a precise estimation of rotational rate. The method has been found to be very robust, and its effectiveness is demonstrated through field data examples.